0165.550US Sequence Listing **SEQUENCE LISTING** AFFHOLTER, JOSEPH A. COX, ANTHONY NESS, JON E. CARR, BRIAN <120> SINGLE-STRANDED NUCLEIC ACID TEMPLATE-MEDIATED RECOMBINATION AND NUCLEIC ACID FRAGMENT ISOLATION <130> 0165.550us <140> 09/721,507 <141> 2000-09-22 <150> 09/656,549 <151> 2000-09-06 <150> 60/185,244 <151> 2000-02-28 <150> 60/185,815 <151> 2000-02-29 <150> 60/186,247 <151> 2000-03-01 <150> 60/186,482 <151> 2000-03-02 <160> 37 <170> PatentIn Ver. 2.1 <210> 1 <211> 4 <212> PRT <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Illustrative peptide <400> 1 Ala Ala Pro Phe <210> 2 <211> 20

ataagattag cggatcctac

<212> DNA

<400> 2

<210> 3 <211> 20

<213> Artificial Sequence

<223> Description of Artificial Sequence: Primer

```
0165.550US Sequence Listing
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Primer
<400> 3
tcgggcatgg cactcttgaa
                                                                                          20
<210> 4
<211> 1180
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
        subtilisin E
<220>
<221> modified_base
<222> (1)..(16)
<223> a, c, t, g, other or unknown
<221> modified_base
<222> (1163)..(1180)
<223> a, c, t, g, other or unknown
<400> 4
nnnnnnnnn nnnnnngtga gaagcaaaaa attgtggatc agcttgttgt ttgcgttaac 60
gttaatcttt acgatggcgt tcagcaacat gtctgcgcag gctgccggaa aaagcagtac 120 agaaaagaaa tacattgtcg gatttaaaca gacaatgagt gccatgagtt ccgccaagaa 180
aaaggatgtt atttctgaaa aaggcggaaa ggttcaaaag caatttaagt atgttaacgc 240
ggccgcagca acattggatg aaaaagctgt aaaagaattg aaaaaagatc cgagcgttgc 300
atatgtggaa gaagatcata ttgcacatga atatgcgcaa tctgttcctt atggcattic 360
tcaaattaaa gcgccggctc ttcactctca aggctacaca ggctctaacg taaaagtagc 420
tgttatcgac agcggaattg actcttctca tcctgactta aacgtcagag gcggagcaag 480 cttcgtacct tctgaaacaa acccatacca ggacggcagt tctcacggta cgcatgtagc 540 cggtacgatt gccgctctta ataactcaat cggtgttctg ggcgttagcc caagcgcatc 600 attatatgca gtaaaagtgc ttgattcaac aggaagcggc caatatagct ggattattaa 660
cggcattgag tgggccattt ccaacaatat ggatgttatc aacatgagcc ttggcggacc 720
tactggttct acagcgctga aaacagtcgt tgacaaagcc gtttccagcg gtatcgtcgt 780
tgctgccgca gccggaaacg aaggttcatc cggaagcáca ágcacagtcg gctaccctgc 840
aaaatatcct tctactattg cagtaggtgc ggtaaacagc agcaaccaaa gagcttcatt 900 ctccagcgca ggttctgagc ttgatgtgat ggctcctggc gtgtccatcc aaagcacact 960 tcctggaggc acttacggcg cttataacgg aacgtccatg gcgactcctc acgttgccgg 1020 agcagcagcg ttaattcttt ctaagcaccc gacttggaca aacgcgcaag tccgtgatcg 1080
titagaaagc actgcaacat atctiggaaa ctcttictac tatggaaaag ggttaatcaa 1140
cgtacaagca gctgcacaat aannnnnnn nnnnnnnnn
                                                                                          1180
<210> 5
<211> 45
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
        oligonucleotide
<220>
<221> modified_base
```

```
0165.550US Sequence Listing
<222> (7)..(44)
<223> a, c, t, g, other or unknown
<400> 5
ggatconnn nnnnnnnn nnnnnnnn nnnnnnnn nnnnc
                                                                   45
<210> 6
<211> 42
<212> DNA ·
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (7)..(41)
<223> a, c, t, g, other or unknown
<400> 6
ggatccnnnn nnnnnnnnn nnnnnnnnn nc
                                                                   42
<210> 7
<211> 39
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (7)..(38)
<223> a, c, t, g, other or unknown
ggatconnn nnnnnnnnn nnnnnnnn nnnnnnnc
                                                                  39
<210> 8
<211> 36
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (7)..(35)
<223> a, c, t, g, other or unknown
<400> 8
ggatconnn nnnnnnnnn nnnnnnnn nnnnnc
                                                                  36
<210> 9
<211> 33
```

0165.550US Sequence Listing <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic oligonucleotide <220> <221> modified_base <222> (7)..(32) <223> a, c, t, g, other or unknown <400> 9 ggatccnnnn nnnnnnnnn nnc 33 <210> 10 <211> 30 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic oligonucleotide <220> <221> modified_base <222> (7)..(29) <223> a, c, t, g, other or unknown <400> 10 ggatconnn nnnnnnnn nnnnnnnnc 30 <210> 11 <211> 27 <212> DNA <213> Artificial Sequence <223> Description of Artificial Sequence: Synthetic oligonucleotide <220> <221> modified_base <222> (7)..(26) <223> a, c, t, g, other or unknown <400> 11 ggatccnnnn nnnnnnnnn nnnnnnc 27 <210> 12 <211> 24 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: Synthetic oligonucleotide <220> <221> modified_base

```
0165.550US Sequence Listing
<222> (7)..(23)
<223> a, c, t, g, other or unknown
<400> 12
ggatccnnnn nnnnnnnnnn nnnc
                                                                        24
<210> 13
<211> 21
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
       oligonucleotide
<220>
<221> modified_base
<222> (7)..(20)
<223> a, c, t, g, other or unknown
<400> 13
ggatccnnnn nnnnnnnnn c
                                                                        21
<210> 14
<211> 18
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (7)..(17)
<223> a, c, t, g, other or unknown
<400> 14
ggatccnnnn nnnnnnc
                                                                        18
<210> 15
<211> 15
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base <222> (7)..(14)
<223> a, c, t, g, other or unknown
<400> 15
ggatccnnnn nnnnc
                                                                       15
<210> 16
<211> 12
```

Page 5

```
0165.550US Sequence Listing
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence: Synthetic
       oligonucleotide
<220>
<221> modified_base
<222> (7)..(11)
<223> a, c, t, g, other or unknown
<400> 16
ggatccnnnn nc
                                                                          12
<210> 17
<211> 12
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
    oligonucleotide
<220>
<221> modified_base
<222> (1)..(12)
<223> a, c, t, g, other or unknown
<400> 17
nnnnnnnnn nn
                                                                         12
<210> 18
<211> 15
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(15)
<223> a, c, t, g, other or unknown
<400> 18
nnnnnnnnn nnnnn
                                                                         15
<210> 19
<211> 18
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
```

Page 6

```
0165.550US Sequence Listing
 <222> (1)..(18)
 <223> a, c, t, g, other or unknown
 <400> 19
nnnnnnnn nnnnnnn
                                                                        18
<210> 20
<211> 21
<212> DNA
<213> Artificial Sequence
<220>
 <223> Description of Artificial Sequence: Synthetic
       oligonucleotide
<220>
<221> modified_base
<222> (1)..(21)
<223> a, c, t, g, other or unknown
<400> 20
nnnnnnnnn nnnnnnnnn n
                                                                       21
<210> 21
<211> 24
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(24)
<223> a, c, t, g, other or unknown
<400> 21
nnnnnnnnn nnnnnnnnn nnnn
                                                                       24
<210> 22
<211> 27
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base <222> (1)..(27)
<223> a, c, t, g, other or unknown
<400> 22
nnnnnnnn nnnnnnnnn nnnnnnn
                                                                       27
<210> 23
<211> 30
```

Page 7

```
0165.550US Sequence Listing
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(30)
<223> a, c, t, g, other or unknown
<400> 23
nnnnnnnnn nnnnnnnnn nnnnnnnnn
                                                                       30
<210> 24
<211> 33
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(33)
<223> a, c, t, g, other or unknown
nnnnnnnnn nnnnnnnnn nnnnnnnnn nnn
                                                                       33
<210> 25
<211> 39
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(38)
<223> a, c, t, g, other or unknown
<400> 25
nnnnnnnn nnnnnnnn nnnnnnnnn nnnnnnnc
                                                                       39
<210> 26
<211> 39
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
```

```
0165.550US Sequence Listing
<222> (1)..(35)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
<222> (37)..(39)
<223> a, c, t, g, other or unknown
<400> 26
nnnnnnnn nnnnnnnnn nnnnnnnn nnnnncnnn
                                                                       39
<210> 27
<211> 39
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(32)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
<222> (34)..(39)
<223> a, c, t, g, other or unknown
<400> 27
nnnnnnnn nnnnnnnnn nnnnnnnnn nncnnnnn
                                                                      39
<210> 28
<211> 39
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(29)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
<222> (31)..(39)
<223> a, c, t, g, other or unknown
nnnnnnnn nnnnnnnn nnnnnnnnc nnnnnnnn
                                                                      39
<210> 29
<211> 39
<212> DNA
<213> Artificial Sequence
```

Page 9

```
0165.550US Sequence Listing
 <220>
 <223> Description of Artificial Sequence: Synthetic
       oligonucleotide
 <220>
 <221> modified_base
<222> (1)..(26)
<223> a, c, t, g, other or unknown
<220>
 <221> modified_base
 <222> (28)..(39)
 <223> a, c, t, g, other or unknown
 <400> 29
 nnnnnnnnn nnnnnnnnn nnnnncnnn nnnnnnnn
                                                                      39
<210> 30
<211> 39
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(23)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
<222> (25)..(39)
<223> a, c, t, g, other or unknown
<400> 30
nnnnnnnn nnnnnnnn nnncnnnnn nnnnnnnn
                                                                     39
<210> 31
<211> 39
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(20)
<223> a, c, t, g, other or unknown
<221> modified_base
<222> (22)..(39)
<223> a, c, t, g, other or unknown
nnnnnnnn nnnnnnnnn cnnnnnnnn nnnnnnnn
                                                                     39
```

0165.550US Sequence Listing

```
<210> 32
<211> 39
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(17)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
<222> (19)..(39)
<223> a, c, t, g, other or unknown
<400> 32
nnnnnnnn nnnnnnncnn nnnnnnnnn nnnnnnnn
                                                                     39
<210> 33
<211> 39
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(14)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
<222> (16)..(39)
<223> a, c, t, g, other or unknown
nnnnnnnn nnnncnnnn nnnnnnnnn nnnnnnnn
                                                                     39
<210> 34
<211> 39
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
     oligonucleotide
<220>
<221> modified_base
<222> (1)..(11)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
```

```
0165.550US Sequence Listing
 <222> (13)..(39)
 <223> a, c, t, g, other or unknown
 nnnnnnnn ncnnnnnnn nnnnnnnnn nnnnnnnn
                                                                      39
 <210> 35
 <211> 39
<212> DNA
 <213> Artificial Sequence
 <220>
 <223> Description of Artificial Sequence: Synthetic
       oligonucleotide
<220>
<221> modified_base
<222> (1)..(8)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
<222> (10)..(39)
<223> a, c, t, g, other or unknown
nnnnnnnn nnnnnnnn nnnnnnnn nnnnnnnn
                                                                      39
<210> 36
<211> 39
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
<221> modified_base
<222> (1)..(5)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
<222> (7)..(39)
<223> a, c, t, g, other or unknown
39
<210> 37
<211> 39
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<220>
```

0165.550US Sequence Listing

```
<221> modified_base
<222> (1)..(2)
<223> a, c, t, g, other or unknown
<220>
<221> modified_base
<222> (4)..(39)
<223> a, c, t, g, other or unknown
<400> 37
nncnnnnnn nnnnnnnnn nnnnnnnn nnnnnnnn
```